DOCUMENT RESUME

ED 252 627 UD 024 008

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TITLE Identifying Effective Schools; A Case Study Involving Black Racially Isolated Minority Schools and Instructional Accomplishment Information Systems.
INSTITUTION Southwest Regional Laboratory for Educational Research and Development, Los Alamitos, Calif.
SPONS AGENCY National Inst. of Education (ED), Washington, DC.
REPORT NO SWRL-TR-72
PUB DATE 20 Jul 81
CONTRACT NEC-00-3-0064
NOTE 20p.
PUB TYPE Reports - Research/Technical (143)

EDRS PRICE MF01/PC01 Plus Postage.
DESCRIPTORS *Academic Achievement; *Black Students; Case Studies; Elementary Schools; Evaluation Methods; *Measurement Techniques; *Research Methodology; *School Effectiveness
IDENTIFIERS *Instructional Accomplishment Information Systems; Los Angeles Unified School District CA; *Racially Isolated Schools

ABSTRACT

This study outlines and demonstrates a methodology for identifying effective schools using a random sample of student data generated by the operation of a school district's Instructional Accomplishment Information (IAI) system. (IAI systems are designed to provide school districts with information for reviewing and planning their instructional programs at the class, school, and district levels.) This study outlines and demonstrates a methodology for identifying effective schools using a random sample of student data generated by the operation of a school district's IAI system. The particular context chosen for demonstration is that of Racially Isolated Minority Schools (RIMS) in the Los Angeles Unified School District. The study shows that there are substantial instructional accomplishments in black RIM schools but that these accomplishments are not uniformly spread across the schools. That is, some of the black RIM schools are more effective than others and this study identifies the effective subset. Following the narrative, an appendix discusses technical considerations in using a 5 percent random sample of student records in identifying effective schools. (Author/KH)

SWRL EDUCATIONAL RESEARCH AND DEVELOPMENT

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TECHNICAL REPORT 72

July 20, 1981

IDENTIFYING EFFECTIVE SCHOOLS: A CASE STUDY INVOLVING BLACK RACIALLY ISOLATED MINORITY SCHOOLS AND INSTRUCTIONAL ACCOMPLISHMENT INFORMATION SYSTEMS

George Behr and Barry Bachelor

ABSTRACT

Instructional Accomplishment Information (IAI) systems are designed to provide school districts with information for reviewing and planning their instructional programs. This study outlines and demonstrates a methodology for identifying effective schools using a random sample of student data generated by the operation of a school district's IAI system. The particular context chosen for demonstration is that of Racially Isolated Minority Schools (RIMS). The study shows that there are substantial instructional accomplishments in black RIM schools but that they are not uniformly spread across the schools. That is, some of the black RIM schools are more effective than others and this study identifies the effective subset.

IDENTIFYING EFFECTIVE SCHOOLS: A CASE STUDY INVOLVING BLACK RACIALLY ISOLATED MINORITY SCHOOLS AND INSTRUCTIONAL ACCOMPLISHMENT INFORMATION SYSTEMS

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Instructional Accomplishment Information (IAI) systems are designed to provide schools and school districts with information for reviewing and planning their instructional programs at the class, school, and district levels. The innovative features of IAI systems are thoroughly discussed by Milazzo and Buchanan (1980). Milazzo, Buchanan, & Schutz (1981) also describe a methodology for reviewing and planning at the district level while Behr and Yee (1981) describe reviewing and planning procedures at the class and school level.

The purpose of this study is to demonstrate one of the review and planning uses at the district level. The particular context chosen for demonstration is that of black Racially Isolated Minority Schools (RIMS) in the Los Angeles Unified School District. The methodology demonstrated is one aspect of that described by Milazzo, Buchanan, & Schutz (1981) for analysis of district level data bases.

One of the key principles in the methodology is to isolate instructional accomplishments and then to track down the school and classroom practices that lead to the identified accomplishments.

> The commitment is to isolating RIMS accomplishments, and not just because it is beneficial to point to them--although that would be a refreshing change for RIMS. The intention is to isolate RIMS accomplishments so that they can be traced back to practices that schools have some control over. . . . The research is for what works in RIMS, to find it and hang onto it, and to generalize it to other RIMS [p. 7-8].

One suggested procedural step for isolating the accomplishments is to "identify those RIMS students who have accomplishment scores that are at or above the district average; or, even better, at or above the average for non-RIMS students [p. 7]." The purpose of this study is to report the results of applying the suggested prcedural step in identifying RIMS accomplishments in the Los Angeles Unified School District based upon accomplishment information generated and accumulated during the 1979-80 school year.

Background: 1980 Survey of Essential Skills

Beginning in 1979, the Los Angeles Unified School District in collaboration with SWRL has developed, installed and operated an IAI system. The system has several components which include:

- Survey of Essential Skills (SES)

  The SES are assessment instruments for Reading, Mathematics and Composition for grades 1, 2, 3, 4, 5, and 6. They are administered to all elementary school students each May. They assess students on the skills deemed essential for grade-by-grade progress in each subject area. The assessment instruments are supported by teacher materials, inservice materials, etc.

- SES Reporting System

  The SES assessment instruments are machine scannable so that SES results can be quickly processed and reports prepared for each individual student, for each school aggregated by grade level within school, for each administrative area, and for the district as a whole. The computer software for scanning and processing the results is installed on the District's computer and is operated by District personnel. The reporting system is supported by appropriate print and inservice materials.

- SES 5% Sample

  As part of the computer processing, approximately 5% of the individual student records are randomly selected and stored in a separate archival file for research purposes. Currently for technical reasons the remaining 95% of the student records are not saved in any readily accessible form. Each student record contains demographic and accomplishment information as follows:

Demographic	Accomplishments
1. Attendance Information	For each subject area--Reading, Mathematics, Composition:
2. Home School Code	1. Item responses
3. Ethnicity	2. Skill area scores including writing sample scores at grades 3 and 6
4. Sex	3. Total scores
5. Language Fluency (as applicable for bilingual program considerations)	

Identifying RIMS Accomplishments in Los Angeles

The SES 5% sample was used to preliminarily identify those black RIM schools performing at or above the average for non-RIM schools. For the preliminary analyses, black RIM schools were selected to avoid the NES/LES* language considerations involved in the other non-black RIM schools. Also, for simplicity white student averages were used to identify in aggregate the accomplishments of the non-RIM schools. Thus, the identification logic reduced to identifying those black RIM schools that exceeded in a specified fashion the average performance of white students. A substantial number of black RIM schools meet such criteria. Procedurally, the identification process has four steps.

*NES/LES: Non-English Speaking/Limited English Speaking

The first step in the identification process is the calculation of two kinds of variables for each grade and subject area. These variables are:

A. The average SES performance score for white students district-wide

B. The proportion of black students district-wide at or above the white student average

Because there are six grade levels and three subject areas (reading, mathematics, and composition) at each grade level, 18 A-B pairs of variables are calculated. For example, in 3rd grad reading the district's white students' average performance score is 83% correct. District-wide, 29% of the grade 3, black students scored at or above 83% correct. Thus, for grade 3, variable A is 83% while variable B is 29%.

The second step in the identification process is to examine each black RIM school (enrollment 60% or more black) at each of the 18 points. The purpose is to identify those points where each RIM school has "more-than-its-share" of black students performing above the non-RIM (i.e., white) average. Operationally, "more-than-its-share" is defined relative to variable B which is the district-wide proportion of black students exceeding the average performance score for whites.

Using the previous grade 3 reading example, the logic is as follows. Twenty-nine percent of the district's grade 3 black students exceed the average performance score of 83% correct for grade 3 white students in reading. If these particular grade 3 black students are equally spread among the district's schools, then one would expect approximately 29% of the black, grade 3 students in any one school to score better than 83% correct in reading. If this proportion holds in each school, then the district-wide proportion would be (and is)

29%. Thus, those schools that have approximately 29% of their black grade 3 students scoring above 83% correct are doing "their share" in contributing to the district-wide proportion of 29%.

However, not all schools will exhibit this exact percentage; some will be more and some will be less. For example, those schools showing more than 29% of their black, grade 3 students scoring above 83% correct in reading are doing "more-than-their-share" in contributing to the district-wide proportion. These schools will be offset by other schools showing less than 29% so that the overall district proportion will be 29%.

Operationally then, the second step in the identification process is to note whether or not each black RIM school is contributing "more" or "less" to the district-wide proportion at each of the 18 possible comparison points.

The third step in the identification process is to look at each black RIM school's pattern of accomplishments across the 18 possible comparison points. Operationally, one easy way to identify patterns is to assign a score from 0 to 18 to each school. The score is simply the number of times the school meets or exceeds each of the 18 district-wide proportions. The distribution of black RIM schools across this kind of point scale is shown in Table 1.

The distribution of scores in Table 1 clearly shows that accomplishments are not uniformly spread across the black RIM schools. Twenty-nine percent of the schools score 9 points or more which means that these schools exceed the district-wide proportion at the 18 comparison points the majority of times. Approximately 45% of the school scores are in the 5 to 8 point range. Overall, Table 1 shows that there are accomplishments in the black RIM schools.

Table 1

Distribution of Black RIM Schools
Across the Point Scale

Point Scale*	Number of Schools	Percent of Schools	Cumulative Percent
18	1	1.5	1.5
15	2	2.9	4.4
13	1	1.5	5.9
12	4	5.8	11.7
11	6	8.7	20.4
10	2	2.9	23.3
9	4	5.8	29.1
8	7	10.1	39.2
7	6	8.7	47.9
6	10	14.5	62.4
5	8	11.6	74.0
4	6	8.7	82.7
3	4	5.8	88.5
2	2	2.9	91.4
1	4	5.8	97.2
0	2	2.9	100.0
Total	69	100.0	

*Five schools did not contain all six grade levels. For these schools, the percentage of actual "points" earned to total possible points was calculated and then reconverted to the full point scale. For example, a school with five grade levels can maximally earn 15 points (5 grades time 3 subject areas). If they "earn" 9 points, that is 9/15 of the total possible which proportionally converts to 11 points (rounded) on the full point scale.

The information in Table 1 is graphically displayed in Figure 1 which highlights the fact that accomplishments are not uniformly spread across schools. The smoothed curve in Figure 1 clearly shows that the schools separate themselves into three fairly distinct groups. Not surprisingly, the bulk of the schools are in the middle group while the outside groups represent the extremes in accomplishments with the highest scoring group (the right most group) being larger than the lowest scoring group (the left most group).

What accounts for these separations? It is unlikely that demographic or non-schooling characteristics account for most of the variability. They are all black RIM schools. Though there are demographic variations between these, it is a likely possibility that differences in schooling and instructional practices between the schools account for the separation. Whatever the determinants, the proposition is empirically verifiable simply by taking a closer look (in a subsequent study) at these schools.

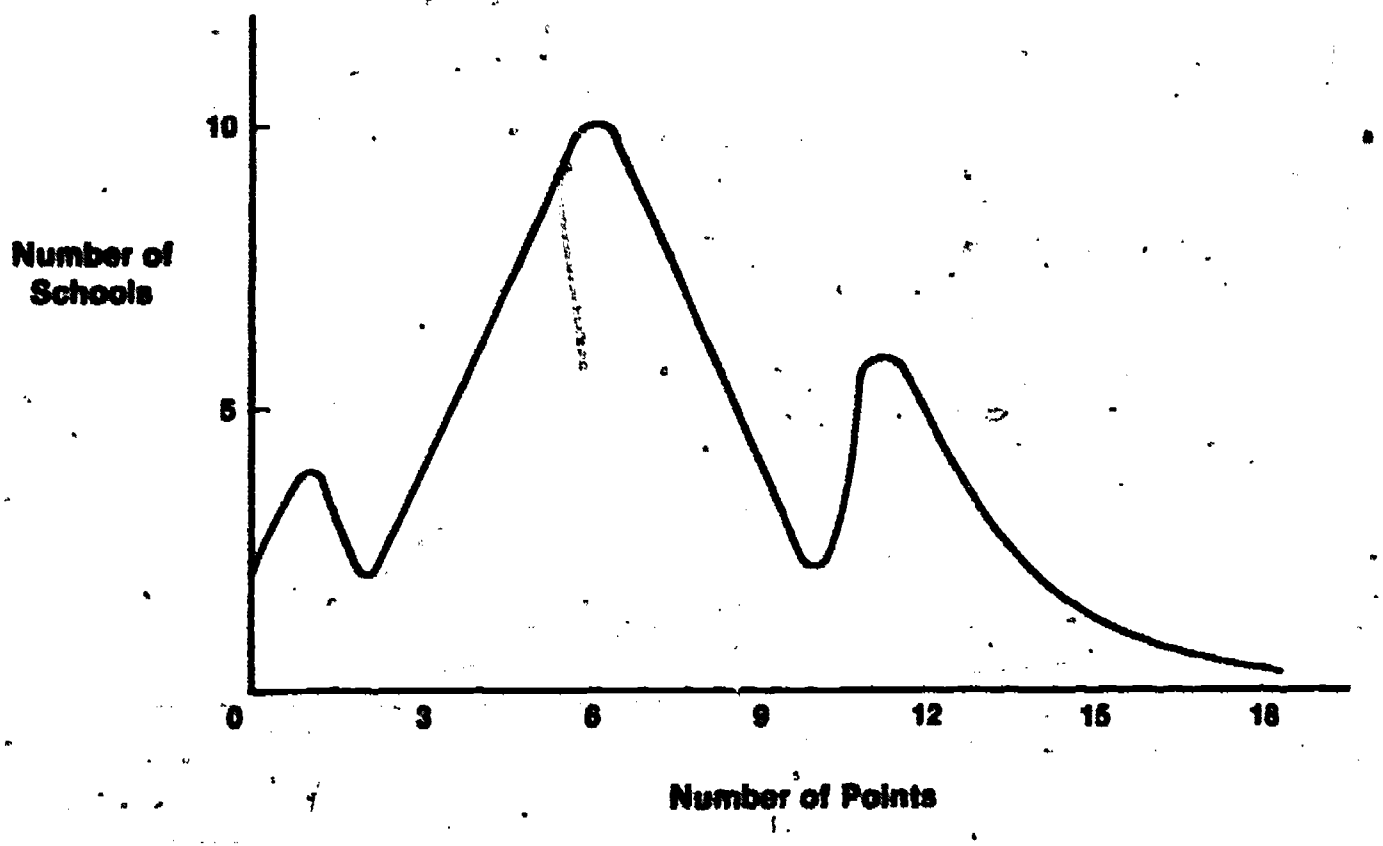

Figure 1. Distribution Of Black RIM Schools Across The Point Scale

Before moving onto establishing criteria to select schools, the total score needs to be examined from another perspective. There are subpatterns of accomplishments that don't necessarily lead to a high total school score. For example, a school may show "scores" in all six grades of mathematics but not score in reading or composition. That is, its mathematics score is six; its reading score is zero; its composition score is zero; therefore, its overall school score is six. Such a pattern reveals school accomplishments in mathematics that are hidden in an overall school score. Because the purpose of this investigation is to identify instructional accomplishments in RIM schools, such subject area subpatterns are of definite interest. Accordingly, Table 2 displays the observed subject area school patterns of the black RIM schools.

Though there are some uneven patterns, the scores between subject areas are more consistent than inconsistent. The few obvious inconsistencies make mathematics appear to be the subject area score that differs either higher or lower, from both reading and composition. The mathematics patterns are extracted and shown in Table 3.

Table 3

Mathematics Patterns

Score	Pattern		
	Reading	Mathematics	Composition
12	3	6	3
11	5	1	5
	3	5	3
8	4	1	3
7	2	4	1

Table 2

Subject Area Score Patterns

Point Scale	Score Patterns			Number of Patterns
	Reading	Mathematics	Composition	
18	6	6	6	1
15	6	4	5	2
13	5	4	4	1
12	4	4	4	3
	3	6	3	1
11	4	4	3	2
	5	1	5	1
	3	5	3	1
	3	4	4	1
10	3	3	4	2
9	3	3	3	2
	3	4	2	1
	4	3	2	1
8	4	1	3	2
	1	3	4	1
	1	2	4	1
	2	3	3	1
	3	2	2	1
	2	4	2	1
7	2	2	3	3
	3	2	2	1
	2	4	1	1
	2	1	4	1
6	2	2	2	4
	1	3	2	2
	2	1	3	2
	3	2	1	2
5	2	1	2	3
	2	2	1	2
	3	1	1	1
	1	1	3	1
4	1	1	2	2
	2	1	1	1
	0	2	2	1
	1	3	0	1
3	1	1	1	2
	1	0	2	1
	2	0	1	1
2	1	1	0	2
1	0	1	0	1
	0	0	1	1
0	0	0	0	2
			Total	64*

*Patterns for the 5 schools not containing all 6 grade levels are not included in Table 2. Their raw score patterns based on 5 grades are 3/3/3, 1/1/2, 2/1/0, 1/0/0, and 0/0/1.

Table 4 shows the correlations between subject area scores and between subject area scores and total scores. The correlations reinforce the previously noted points that (1) the within school patterns across subject areas are more consistent than inconsistent and (2) the strongest distinction occurs between mathematics and language arts.

Table 4

Correlations

Subject	R	M	C	T
R	-			
M	.59	-		
C	.73	.53	-	
T	.89	.82	.87	-

R: Reading; M: Mathematics; C: Composition; T: Total

The fourth and final step in the identification process is to set some score or pattern criteria and identify by name those schools that meet or exceed the criteria. For example, one criteria could be:

a. either a total school score of 9 or more,

b. or, a score of 4 or more in a subject area

Nine and four are cut-off points that do identify schools wherein the majority of the grade-by-subject-area instructional programs appear to be relatively effective on a comparison basis. Schools meeting the criteria appear to have more consistent accomplishments across grade levels and/or subject areas than those schools below the cut-off points. When the above criteria are applied to the 69 black RIM schools in Los Angeles, 27 schools (39%) meet these particular criteria.

There are several points that should be kept in mind relative to the 27 schools and the selection criteria. First, there is always

some arbitrariness involved in cut-off scores. There probably isn't much of a substantive difference between a total school score of 8 and one of 9. (Changing the criteria from 9 to 8 would select 30 schools instead of 27 schools.)

Secondly, "selected/not selected" should not be equated with "accomplishments/no-accomplishments." There are accomplishments in the non-selected schools. The procedure simply ranks the schools on specified criteria and selects from the top of the list. Technical considerations relative to the ranking process and cut-off points are discussed in Appendix 1.

Nevertheless, the results do show that the accomplishments are not uniformly distributed across the schools. That is, the accomplishments tend to cluster in some schools more than others.

Summary

One of the procedural principles suggested by Milazzo et al. for analyzing IAI district level data bases in a RIMS context is to identify those students who have accomplishments scores at or above the average for non-RIM students. This study applies the procedure to black RIM schools in the Los Angeles Unified School District relative to the accomplishment information yielded by the District's 1980 Survey of Essential Skills. The study demonstrates that the procedure is practical. In particular, the effort shows that:

1. a 5% random sample of student records is adequate to preliminarily identify such schools
2. the procedure reveals the many positive accomplishments of RIM schools
3. the accomplishments do cluster in some RIM schools more than others (i.e., the accomplishments are not uniformly spread across all RIM schools); the procedure identifies 27 black RIM schools

4. the preceding points tend to support the idea that schools and schooling practices do make a difference

5. the next logical step is to track down the schooling practices in the identified schools that contribute to the observed pattern of accomplishments

6. twenty-seven is a very manageable number for follow-up efforts

As noted in the beginning, "the intention is to isolate RIMS accomplishments so that they can be traced back to practices that schools have some control over. . ." This study demonstrates procedures for isolating the accomplishments. Specifically, 27 schools are identified. The next logical step is to identify the schooling practices that contribute to the observed pattern of accomplishments.

Appendix 1

Postscript
Technical Considerations in Using the 5% Sample in the School Identification Process

This study preliminarily identifies 27 black RIM schools in Los Angeles that show certain patterns of instructional accomplishments. The data source for the identification process is the 5% random sample of student records drawn from the 1980 administration of the Survey of Essential Skills. Because of certain characteristics of this data base, the word "preliminary" is purposely used when describing the results of the identification process.

This postscript describes the reasons for using the adjective "preliminary." The discussion is included as a postscript because the technical qualifications discussed herein do not alter the logic or conclusions of the study.

The 5% random sample contains 10,666 individual student records sampled from over 440 different schools in the Los Angeles Unified School District. A simple division yields the fact that there are approximately 24 student records per school in the data base. Since the Survey of Essential Skills covers grades 1 through 6, another simple division yields the fact that there are approximately 4 student records per grade level within each school (each student record contains results for all three subject areas). Thus, a relatively small N is used in calculating the proportion of black students who exceed a certain score at a certain grade level in each school (e.g., exceeding 83% correct in reading at grade 3). This small N may introduce "error" when examining a particular grade level, subject area combination (e.g., grade 3 reading) and trying to decide if the school is above or below a certain percentage.

However, for each school there are 18 such decisions to make and a score from 0 to 18 to calculate. The score calculation is simply the sum of yeses over 18 yes/no decisions. Yes, the school's proportion is above the district-wide proportion; No, it is not.

Though there may be "errors" in the total scores, it is very, very unlikely for a school to get a "high" school score (e.g., 9 to 18) based mostly or solely on "errors." High scores most likely represent consistent accomplishments and low scores most likely represent inconsistent accomplishments.*

Alternately stated, if the purpose of the school's score is to identify a "true" score for the school, then the small N and possible "error" at each of the 18 points may be of concern. But, the purpose of the school score is to rank schools and then to select the top schools. In this situation, the small Ns in the calculation process are of less concern because they will not affect the identification of the extremes--the relatively high scores and the relatively low scores.

However, the situation suggests that caution be exercised regarding judgments around the cut-off points. (In any case, caution is always advisable in examining cases near cut-off points.) In recognition of this situation and the fact that the cases around the cut-off point have not been scrutinized over their full, 100%, data set, the adjective "preliminary" is used to describe the results of the identification process of this study.

In following-up any of the identified schools, one of the substeps will be an examination of their full set of SES data. At that point the specific school score can be verified. The full data set is not used in the present study because the cost of retrieving the full data set

*In fact, the chances of obtaining the observed distribution of scores if the yes/no decisions at each point are purely random is very remote ($X^2 = 52896$; $df = 18$; $p = 0$)

for 440 schools is prohibitive. However, retrieving the full data set for approximately 27 schools is feasible. Though it may also be feasible to examine the schools just below the cut-off point, the original 27 schools will provide a more than adequate number of schools to look at in-depth to identify the schooling practices that contribute to their success.

In summary, some of the 27 identified schools may be de-selected after examining their full set of SES data. Also, some few schools below the cut-off point may have been "wrongly" excluded from the selection. To them we apologize. For the above reasons we label the list as preliminary. However, the net result of the study is a very defensible identification of a very manageable number of black RIM schools for further in-depth study.

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